line 24, delete "disclosed in U.S. patent application Ser. No. 08/221,375".

Page 5, line 8, delete "The Detailed Description from U.S. patent application Ser. No. 08/221,375".

Page 13, line 20, delete "The Detailed Description from U.S. patent application Ser. No. 08/416,558".

REMARKS

Claims 1-8 are pending. By this Amendment, the specification is amended as requested in item 1 of the Office Action.

This application is based upon two previously-filed applications, namely U.S. Patent Application No. 08/221,375, filed April 1, 1994 and U.S. Patent Application No. 08/416,558, filed April 4, 1995. U.S. Patent Application No. 08/221,375 subsequently issued as U.S. Patent No. 5,528,118. That application and patent will hereafter be referred to as the 118 patent. U.S. Patent Application No. 08/416,558 issued as U.S. Patent No. 5,874,820. That application and patent will hereafter be referred to as the 820 patent.

The 118 patent disclosed an arrangement in which a wafer stage is mounted such that reaction forces caused by driving of the wafer stage are directed to a reaction frame that is dynamically isolated from a frame that mounts other portions of a photolithographic apparatus, such as, for example, the measuring system that measures a position of a wafer held on the wafer stage, and a projection system that projects an image from a reticle onto the wafer held by the wafer stage.

The drawings and most of the disclosure of the 820 patent are directed to an arrangement in which the reaction forces generated by driving a mask (or reticle) stage are directed to a reaction frame (i.e., a window frame guide) that is dynamically isolated from other portions of the apparatus.

The 820 patent also incorporates by reference the disclosure of the 118 patent. See col. 3, lines 7-14 of the 820 patent. Additionally, the 820 patent states:

(1) at col. 2, lines 22-26:

> It is to be understood that the present stage, with suitable modifications, is not restricted to supporting a reticle but also may be used as a wafer stage and is indeed not limited to photolithography applications but is generally suited to precision stages.

(2) at col. 3, lines 33-35:

> Moreover if the present stage mechanism is to be used for other than a reticle stage, i.e. for supporting a wafer, aperture 30 is not needed.

(3) at col. 5, lines 11-25:

> Base support structure 80 [which supports the window frame guide] is supported by its own support pillars or other conventional support elements (not shown in this drawing) to the ground, i.e. the surface of the earth or the floor of a building. An example of a suitable support structure is disclosed in above-referenced U.S. patent application Ser. No. 08/221,375 at FIGS. 1, 1B, 1C. This independent support structure for this portion of stage mechanism provides the above-described advantage of transmitting the reaction forces of the reticle stage mechanism drive motors away from the frame supporting the other elements of the photolithography apparatus, especially away from the optical elements including the projection lens and from the wafer stage, thereby minimizing vibration forces on the projection lens due to reticle stage movement.

Thus, the 820 patent includes the entire 118 patent disclosure, states that both the wafer stage and the reticle stage reaction forces can be dynamically isolated from other portions of the apparatus, and indicates that the window frame guide shown in the 820 patent can be mounted on the structure that supports the reaction frame of the 118 patent.

Accordingly, the 118 patent (having an April 1, 1994 U.S. filing date) clearly supports claims that only require isolation of reaction forces from one stage, such as the wafer stage.

The 820 patent (having a U.S. filing of April 4, 1995) clearly supports claims directed to isolation of reaction forces caused by driving of a reticle stage, as well as claims directed to isolation of reaction forces caused by driving of two stages (i.e., a reticle stage and a wafer stage).

Item 1 of the Office Action objected to the disclosure for its repetitive references to the parent applications. The specification has been amended to reduce the number of references to the parent applications. These repetitive references were provided so that the record is clear as to which application the various portions of the present specification find support.

Withdrawal of the objection to the disclosure is requested.

Item 2 of the Office Action asserts that "[t]his application is not a proper continuation but instead is a continuation in part. Evidence of this is the specification requires two separate and distinct parent applications to provide an enabling specification for the claimed invention." Applicant respectfully disagrees with the statements from the Office Action.

The present application is identical to the specification of the 820 patent, except that it includes the text from the 118 patent, which was incorporated by reference into the 820 patent as noted above (i.e., see col. 3, lines 7-14 of the 820 patent). As discussed above, and as will be demonstrated in more detail below, the 820 patent specification supports claims directed to the combination where the reaction forces caused by driving of a mask stage and a wafer stage are dynamically isolated. Thus, the present application is a continuation of the 820 patent and a continuation in part of the 118 patent as indicated in the Preliminary Amendment filed with this application. A proper CIP Declaration to that effect is attached hereto. Applicant notes that Rule 53(b) permits the filing of continuation in part applications.

Item 3 of the Office Action asserts that Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. §120. As will be

demonstrated below, some of the claims (claims 1-5 and 8) are supported by the 118 patent, while other claims (claims 6 and 7) are supported by the 820 patent. Thus, claims 1-5 and 8 in this application are entitled to the April 1, 1994 filing date of the 118 patent, whereas claims 6 and 7 are entitled to the April 4, 1995 filing date of the 820 patent.

The following tables demonstrate support in the 118 and/or 820 patents for the subject matter of claims 1-8. For ease of comparison, reference is made to the 118 patent (unless otherwise noted) and to the corresponding portions of the present application. (As noted in the application, the reference numerals of the drawings from the 118 patent have been changed to avoid the use of the same reference numeral to designate different elements. Thus, the reference numerals contained in the following tables correspond to the reference numerals used in the 118 and 820 patents, rather than to the reference numeral contained in the drawings filed with this application.)

Claim 1 of U.S. Application No. 09/449,763 - Claim 1 of U.S. Patent No. 5,953,105

Claim Features	**105 Patent Disclosure**	**Support in 09/449,763**
A positioning device comprising an object table,	The lithographic device of Figs. 1-3 includes substrate table 1. Col. 7, lines 18-24. The object table of the known positioning device corresponds to the substrate table of the known lithographic device. Col. 1, lines 36-38.	The 118 patent discloses an apparatus that has many applications to many different types of instruments for precise positioning of objects. 118 patent col. 3, lines 3-6; 763 application page 5, lines 9-11. In a preferred embodiment, a photolithographic instrument 10 includes an object or wafer or XY stage 30 that supports a wafer. Col. 3, line 45; page 6, lines 4-6.

Claim Features	105 Patent Disclosure	Support in 09/449,763
a sub-system for processing an object to be placed on the object table,	The lithographic device of Figs. 1-3 includes projection system 3, a mask table 5, and a radiation source 7. Col. 7, lines 18-24. The sub-system of the known positioning device corresponds to a sub-system comprising the projection system, the mask table, and the radiation source of the known lithographic device. Col. 1, lines 38-41.	The photolithographic instrument 10 includes an optical system 12 having an illuminator 14, a mask holder RST and a projection optical system 16. Col. 3, lines 16-30; page 5, lines 18-28.
a drive unit for displacing the object table relative to the sub-system,	A drive unit 21 of the substrate table includes a first linear motor 151, a second linear motor 153 and a third linear motor 155. Col. 12, line 53 - col. 14, line 6.	Linear drive motors align the wafer with the lens of the optical system, and include X drive coils 42X and 42X' and Y-driving members such as drive coils 44Y and 44Y'. Col. 3, lines 53-64; page 6, lines 12-20.
and a measuring system for measuring a position of the object table relative to the sub-system,	A laser interferometer system 41 includes movable parts 43 and 45 fastened to the substrate table 1, and stationary parts 51, 53 and 55. Col. 8, line 65 - col. 9, line 15, The position of the substrate table 1 relative to the projection optical system 3 is measured by means of the stationary parts 51, 53, 55 and the movable parts 43 and 45. Col. 14, lines 46-49.	A laser interferometer system 92 determines and controls the precise XY location of the XY stage 30 relative to a fixed mirror RMX at the lower part of the lens barrel PL of the projection optical system 16. Col. 3, line 65 - col. 4, line 4; page 6, lines 21-25.

Claim Features	105 Patent Disclosure	Support in 09/449,763
the drive unit comprising a stationary part which is fastened to a first frame of the positioning device,	A stationary part 157 of second linear motor 153 is fastened on an arm 159 which is fastened to the base 83 belonging to the machine frame 85. Col. 12, lines 58-61.	A reaction frame assembly 60 (col. 4, lines 5-9; page 6, lines 26-29) supports and guides an X follower 72 and a Y follower 82 (col. 4, lines 10-22; page 6, line 30 - page 7, line 7). Drive elements such as drive tracks 78 and 78' are mounted on arms 74 and 74' of the X follower 72, and cooperate with the drive elements 42X, 42X' of the XY stage. Col. 4, lines 23-33; page 7, lines 8-15. Drive elements such as drive tracks 88 and 88' are mounted on arms 84 and 84' of the Y follower 82, and cooperate with the drive elements 44X, 44X' of the XY stage. Col. 4, line 63 - col. 5, line 7; page 8, lines 4-12.
while the measuring system comprises a stationary part and a movable part which is fastened to the object table for cooperation with the stationary part of the measuring system,	A laser interferometer system 41 includes movable parts 43 and 45 fastened to the substrate table 1, and stationary parts 51, 53 and 55. Col. 8, line 65 - col. 9, line 15.	As shown in Fig. 1C, the interferometer system includes a movable mirror 42X that is mounted to the XY stage 30, and a stationary part 92. (Also see col. 3, line 65 - col. 4, line 4; page 6, lines 21-25.)
characterized in that the stationary part of the measuring system is fastened to a second frame of the positioning device which is dynamically isolated from the first frame.	The stationary parts 51, 53 and 55 are fastened to the reference frame 89 of the lithographic device, which is dynamically isolated from the machine frame 85. Col. 14, lines 53-58.	As shown in Fig. 1C, the stationary part 92 of the interferometer system is mounted to the support structure 20, 22, 26, 27 of the wafer stage base 28. The reaction frame 61 is directly supported on the foundation 21 by the four support posts 62 independently from the wafer stage base 28. Col. 7, lines 17-19; page 11, lines 25-26.

Claim 2 of U.S. Application No. 09/449,763 - Claim 2 of U.S. Patent No. 5,953,105

Claim Features	105 Patent Disclosure	Support in 09/449,763
A positioning device as claimed in claim 1, characterized in that the sub-system, is fastened to the second frame.	The projection system 3 is fastened to main plate 91 of the reference frame 89. Col. 9, lines 38-40 and 49-51. Mask table 5 is attached to support member 101 which is part of the reference frame 89. Col. 9, lines 51-58.	As shown in Fig. 1B, the illuminator 14, the mask holder RST and the projection optical system 16 are mounted on supports 20. Also see col. 3, lines 27-30 and col. 6, lines 12-14; page 5, lines 26-28 and page 10, lines 2-4.

Claim 3 of U.S. Application No. 09/449,763 - Claim 3 of U.S. Patent No. 5,953,105

Claim Features	105 Patent Disclosure	Support in 09/449,763
A positioning device as claimed in claim 1, characterized in that the object table is displaceable over a guide parallel to at least an X-direction, the guide being fastened to the second frame.	A horizontal support plate 105 for the substrate table 1 also belongs to the reference frame 89. Col. 9, lines 63-66.	As shown in Figs. 1B and 1C, the XY stage 30 is displaceable over wafer stage base 28, which extends in the X-direction (Fig. 1C) and is fastened to supports 20. Also see col. 3, lines 31-51; page 5, line 29 - page 6, line 11.

Claim 4 of U.S. Application No. 09/449,763 - Claim 5 of U.S. Patent No. 5,953,105

Claim Features	105 Patent Disclosure	Support in 09/449,763
A lithographic device comprising a radiation source,	The lithographic device of Figs. 1-3 includes a radiation source 7. Col. 7, lines 18-24.	The 118 patent discloses a photolithographic instrument 10 that includes an optical system 12 having an illuminator 14. Col. 3, lines 16-30; page 5, lines 18-28.
a mask table,	Mask table 5. Col. 7, lines 18-24.	Mask holder RST. Col. 3, lines 16-30; page 5, lines 18-28.
a projection system having a main axis,	Projection system 3 (col. 7, lines 18-24) includes optical main axis 25 parallel to the Z-direction (col. 7, lines 35-37).	A projection optical system 16 includes a main axis that extends in the vertical, Z-axis direction. Col. 3, lines 16-30; page 5, lines 18-28.

Claim Features	105 Patent Disclosure	Support in 09/449,763
a substrate table,	Substrate table 1. Col. 7, lines 18-24.	The photolithographic instrument 10 includes an object or wafer or XY stage 30 that supports a wafer. Col. 3, line 45; page 6, lines 4-6.
a drive unit for displacing the substrate table relative to the projection system in at least one direction perpendicular to the main axis,	A drive unit 21 of the substrate table includes a first linear motor 151, a second linear motor 153 and a third linear motor 155. Col. 12, line 53 - col. 14, line 6.	Linear drive motors align the wafer with the lens of the optical system, and include X drive coils 42X and 42X' and Y-driving members such as drive coils 44Y and 44Y' that displace the wafer stage 30 in the X and Y directions, which are perpendicular to the Z-axis direction. Col. 3, lines 53-64; page 6, lines 12-20.
and a measuring system for measuring a position of the substrate table relative to the projection system,	A laser interferometer system 41 includes movable parts 43 and 45 fastened to the substrate table 1, and stationary parts 51, 53 and 55. Col. 8, line 65 - col. 9, line 15, The position of the substrate table 1 relative to the projection optical system 3 is measured by means of the stationary parts 51, 53, 55 and the movable parts 43 and 45. Col. 14, lines 46-49.	A laser interferometer system 92 determines and controls the precise XY location of the XY stage 30 relative to a fixed mirror RMX at the lower part of the lens barrel PL of the projection optical system 16. Col. 3, line 65 - col. 4, line 4; page 6, lines 21-25.
the drive unit comprising a stationary part which is fastened to a first frame of the lithographic device,	A stationary part 157 of second linear motor 153 is fastened on an arm 159 which is fastened to the base 83 belonging to the machine frame 85. Col. 12, lines 58-61.	A reaction frame assembly 60 (col. 4, lines 5-9; page 6, lines 26-29) supports and guides an X follower 72 and a Y follower 82 (col. 4, lines 10-22; page 6, line 30 - page 7, line 7). Drive elements such as drive tracks 78 and 78' are mounted on arms 74 and 74' of the X follower 72, and cooperate with the drive elements 42X, 42X' of the XY stage. Col. 4, lines 23-33; page 7, lines 8-15. Drive elements such as drive tracks

Claim Features	105 Patent Disclosure	Support in 09/449,763
		88 and 88' are mounted on arms 84 and 84' of the Y follower 82, and cooperate with the drive elements 44X, 44X' of the XY stage. Col. 4, line 63 - col. 5, line 7; page 8, lines 4-12.
while the measuring system comprises a stationary part and a movable part which is fastened to the substrate table for cooperation with the stationary part of the measuring system,	A laser interferometer system 41 includes movable parts 43 and 45 fastened to the substrate table 1, and stationary parts 51, 53 and 55. Col. 8, line 65 - col. 9, line 15.	As shown in Fig. 1C, the interferometer system includes a movable mirror 42X that is mounted to the XY stage 30, and a stationary part 92. (Also see col. 3, line 65 - col. 4, line 4; page 6, lines 21-25.)
characterized in that the stationary part of the measuring system is fastened to a second frame of the lithographic device which is dynamically isolated from the first frame.	The stationary parts 51, 53 and 55 are fastened to the reference frame 89 of the lithographic device, which is dynamically isolated from the machine frame 85. Col. 14, lines 53-58.	As shown in Fig. 1C, the stationary part 92 of the interferometer system is mounted to the support structure 20, 22, 26, 27 of the wafer stage base 28. The reaction frame 61 is directly supported on the foundation 21 by the four support posts 62 independently from the wafer stage base 28. Col. 7, lines 17-19; page 11, lines 25-26.

Claim 5 of U.S. Application No. 09/449,763 - Claim 6 of U.S. Patent No. 5,953,105

Claim Features	105 Patent Disclosure	Support in 09/449,763
A lithographic device as claimed in claim 4, characterized in that the substrate table is displaceable over a guide which extends perpendicular to the main axis and is fastened to the second frame.	A horizontal support plate 105 for the substrate table 1 also belongs to the reference frame 89. Col. 9, lines 63-66.	As shown in Figs. 1B and 1C, the XY stage 30 is displaceable over wafer stage base 28, which extends in the X-direction (Fig. 1C) and is fastened to supports 20. Also see col. 3, lines 31-51; page 5, line 29 - page 6, line 11.

Claim 6 of U.S. Application No. 09/449,763 - Claim 8 of U.S. Patent No. 5,953,105

Claim Features	105 Patent Disclosure	Support in 09/449,763
A lithographic device as claimed in claim 4, characterized in that the lithographic device comprises a further drive unit for displacing the mask table relative to the projection system in a scanning direction perpendicular to the main axis,	A further drive unit 31 drives the mask table 5, and includes a first linear motor 115 and a second linear motor 117. Col. 10, line 27 - col. 11, line 33.	The 820 patent incorporates by reference the disclosure of the 118 patent (820 patent col. 3, lines 7-14), and thus discloses all of the features recited in claim 4. Reticle stage 10 supports a reticle 24 (820 patent col. 3, lines 15-26; page 13, lines 21-29), and is driven along the Y axis by motor coils 68A and 68B mounted respectively on the left and right edges of the stage 10. 820 patent col. 4, lines 39-41; page 15, lines 22-23.
the further drive unit comprising a stationary part which is fastened to the first frame,	A stationary part 119 of the second linear motor 117 is fastened to column 87 of the machine frame 85. Col. 10, lines 29-32.	The motor coils 68A and 68B move in magnetic tracks 70A and 70B, respectively, which are mounted in window frame guide members 40C and 40D. 820 patent col. 4, lines 41-44; page 15, lines 23-26. Window frame guide members 40C and 40D are part of a window frame guide (820 patent col. 3, line 58 - col. 4, line 5; page 14, lines 19-29), which is supported by base support structure 80 (820 patent col. 5, lines 5-11; page 16, lines 13-17), which in turn can be supported by four pillars 114A-D and four bracket structure 116A-D (820 patent col. 6, lines 39-45; page 18, lines 23-28). Another example of structure for supporting the base support structure 80 is shown in Figs, 1, 1B and 1C of the 118 patent. 820 patent col. 5, lines 11-25; page 16, lines 17-28.

Claim Features	105 Patent Disclosure	Support in 09/449,763
while the substrate table is displaceable relative to the projection system parallel to at least the scanning direction,	The substrate table 1 should be displaced relative to the projection system 3 parallel to the X-direction. Col. 13, lines 27-30.	The XY wafer stage 30 is displaced in the X and Y directions, which are perpendicular to the Z-axis direction. 118 patent col. 3, lines 53-64; page 6, lines 12-20.
the measuring system comprising a further stationary part which is fastened to the second frame and a further movable part which is fastened to the mask table for cooperation with the further stationary part of the measuring system for measuring a position of the mask table relative to the projection system or for measuring a position of the mask table relative to the substrate table.	The laser interferometer system 41 also includes movable parts 63 and 65 fastened to the mask table 5, and stationary parts 71, 73 and 75. Col. 9, lines 15-33. The stationary parts 71, 73 and 75 are fastened to the reference frame 89 of the lithographic device. Col. 14, lines 53-58.	Stationary interferometers 112A, 112B and 112C are mounted to the supports 108 and 110, which form part of the photolithography device frame 94 to which the stationary portions 124 of the wafer interferometers also are attached (see Fig. 5 of the 820 patent). 820 patent col. 6, lines 18-45; page 18, lines 7-28. Movable mirrors 14A and 14B of the reticle interferometers are located on the reticle stage 10. 820 patent col. 3, lines 16-19; page 13, lines 22-23.

Claim 7 of U.S. Application No. 09/449,763 - Claim 9 of U.S. Patent No. 5,953,105

Claim Features	105 Patent Disclosure	Support in 09/449,763
A lithographic device as claimed in claim 6, characterized in that the mask table is displaceable over a first guide extending parallel to the scanning direction and the substrate table is displaceable over a second guide extending perpendicularly to the main axis, the first guide and the second guide being fastened to the second frame.	Mask table 5 is attached to support member 101 which is part of the reference frame 89. Col. 9, lines 51-58. A horizontal support plate 105 for the substrate table 1 also belongs to the reference frame 89. Col. 9, lines 63-66.	The reticle stage 10 is displaceable over the base structure 32, which extends in the X and Y axis directions. 820 patent col. 3, lines 35-45; page 14, lines 2-10. As shown in Figs. 1B and 1C of the 118 patent, the XY stage 30 is displaceable over wafer stage base 28, which extends in the X-direction (Fig. 1C) and is fastened to supports 20. Also see 118 patent col. 3, lines 31-51; page 5, line 29 - page 6, line 11. The wafer stage support structure 124 in Fig. 5 of the 820 patent also extends in the X and Y axis directions.

Claim 8 of U.S. Application No. 09/449,763 - Claim 11 of U.S. Patent No. 5,953,105

Claim Features	105 Patent Disclosure	Support in 09/449,763
A lithographic device as claimed in claim 4, characterized in that the projection system is fastened to the second frame.	The projection system 3 is fastened to main plate 91 of the reference frame 89. Col. 9, lines 38-40 and 49-51.	As shown in Fig. 1B, the illuminator 14, the mask holder RST and the projection optical system 16 are mounted on supports 20. Also see 118 patent col. 3, lines 27-30 and col. 6, lines 12-14; page 5, lines 26-28 and page 10, lines 2-4.

Item 4 of the Office Action rejects claims 1-8 under 35 U.S.C. §102(e) over U.S. Patent No. 5,953,105 to Van Engelen et al. This rejection is respectfully traversed.

The 35 U.S.C. §102(e) date of Van Engelen et al. is January 30, 1997. As detailed above, the claims of the present application are supported by one or the other of Applicant's prior applications, and thus have U.S. filing dates of either April 1, 1994 or April 4, 1995. These dates are well before January 30, 1997, and also predate the earliest foreign priority date of May 30, 1995, associated with Van Engelen et al.

Accordingly, Van Engelen et al. is not available as prior art against the claims of this application. The rejection of claims 1-8 under 35 U.S.C. §102(e) should be withdrawn, and an interference should be declared.

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,

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JAO:MAC/jth

Attachment:
Executed CIP Declaration

Date: August 30, 2000

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